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Epidermal desquamation in Thiel-embalmed cadavers: histologic study

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The background of the slide is composed of several histological images. On the left, there is a large, vertical, black and white image showing a dense, wavy pattern of tissue. On the right, there is a large, vertical, pink and purple image showing a cross-section of skin with a prominent, wavy, and irregular epidermal layer. At the bottom, there is a horizontal, pink and purple image showing a cross-section of skin with a prominent, wavy, and irregular epidermal layer.

Centre for Anatomy and
Human Identification
University of Dundee

Epidermal desquamation in Thiel-embalmed cadavers: histological study

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Dr. Lucina Hackman, Dr. Helen Langstaff

3rd December 2018

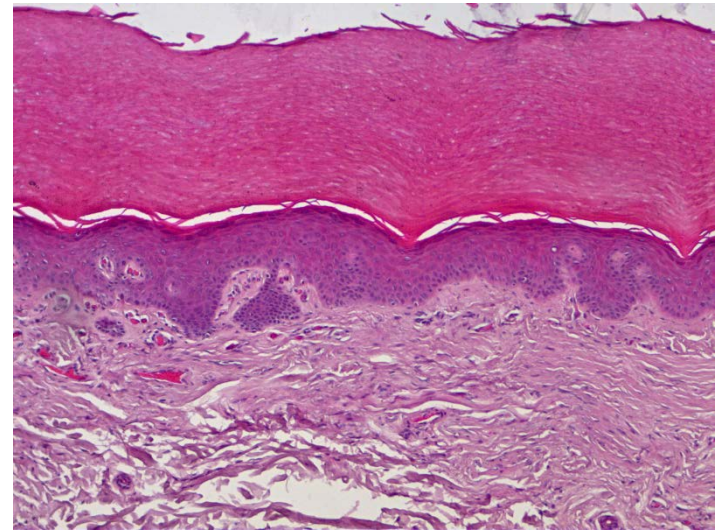
Introduction

- Soft-fix Thiel embalming method
- Epidermal desquamation
- Skin histologic study



Purpose of the study

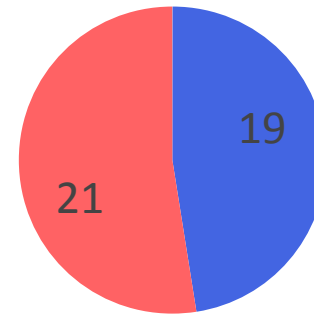
- Time and nature of epidermal desquamation
- Confirm/refute exposed dermal layer
- Compare epidermal and dermal fingerprints
- Identification of bodies exposed to wet/humid conditions



Materials and Methods

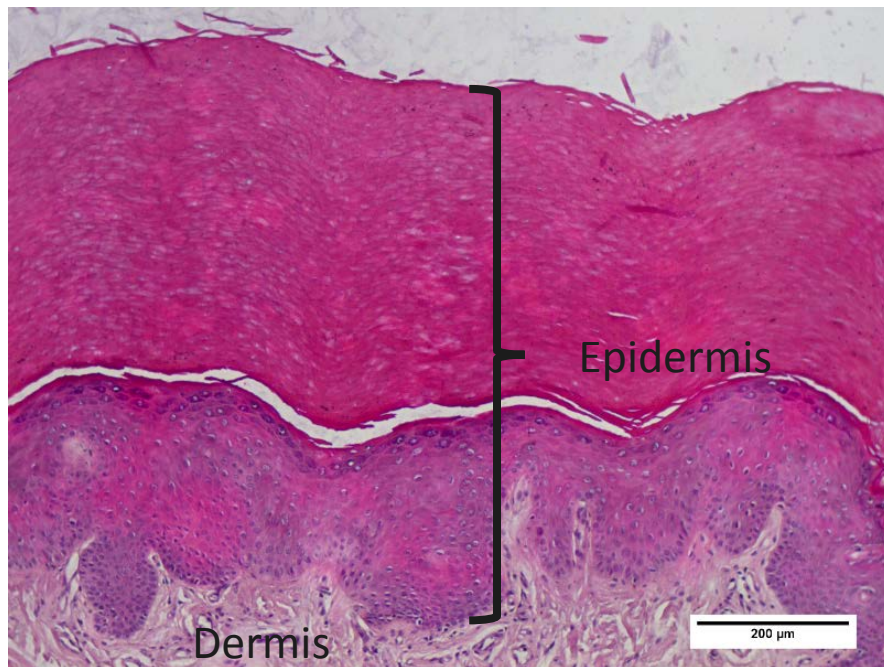
- Individuals bequeathed to CAHID ($N_{\text{total}} = 40$)
 - Left thumb
 - Biopsy skin punch (\varnothing 4mm)
 - Haematoxylin-Eosin staining
 - Optical light microscopy
-
- Sampled prior to embalming and then weekly for 4 weeks ($N_{4w} = 8$) and 6 weeks ($N_{6w} = 12$) after the immersion into embalming tank
 - Controls sampled post-embalming ($N_{\text{control}} = 20$)

- Males (mean age at death = 76.21)
- Females (mean age at death = 83.05)

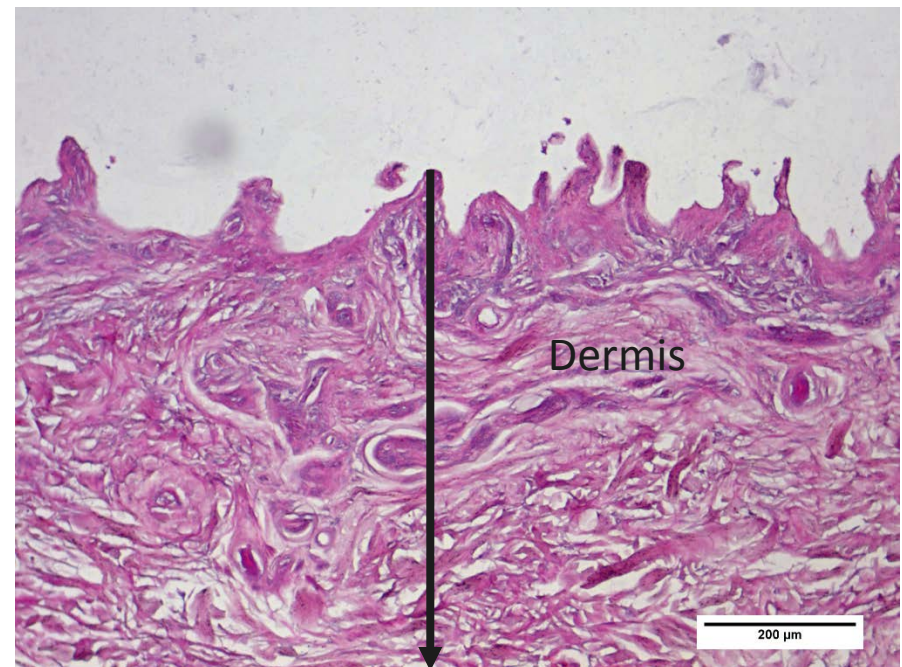


Results I: Epidermal desquamation

Skin prior to desquamation

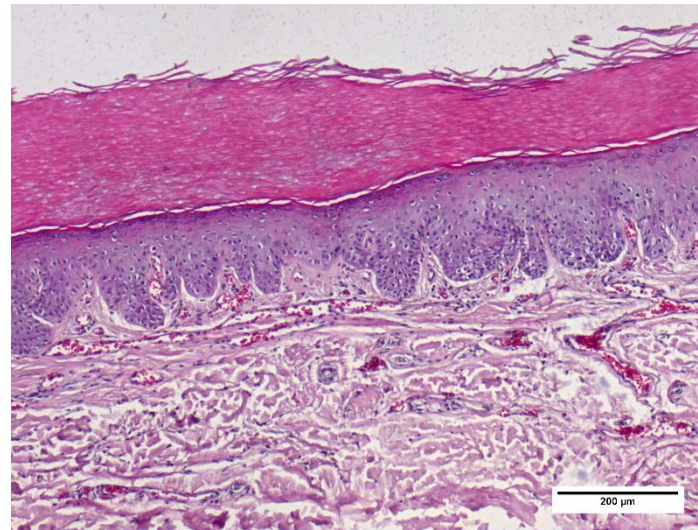


Skin after desquamation

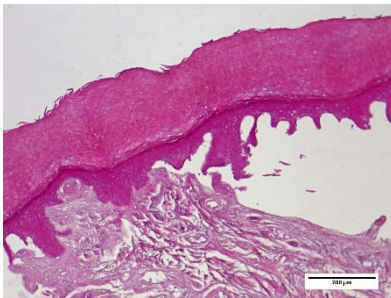


Results II: Time frame of epidermal desquamation (example)

Pre-embalming



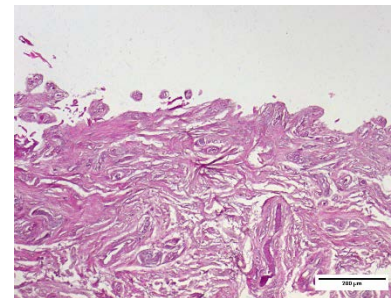
Week 1



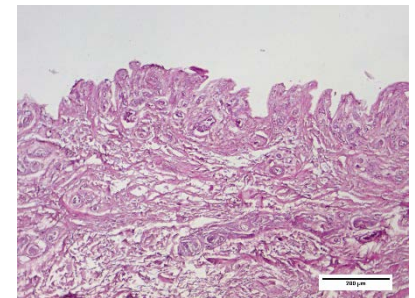
Week 2



Week 3



Week 4





Results II: Time frame of epidermal desquamation (4 weeks)

Time of observed epidermal desquamation					
	Pre-embalming	Week 1	Week 2	Week 3	Week 4
Number of individuals	0	4	0	1	2

- Number of bodies with **no epidermal desquamation observed within 4-week** embalming interval = **1**



Results II: Time frame of epidermal desquamation (6 weeks)

Time of observed epidermal desquamation							
	Pre-embalming	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Number of individuals	0	6	0	3	1	1	0

- Number of bodies with **no epidermal desquamation observed within 6-week** embalming interval = **1**

Outcomes of histologic study

- Exposed **dermis** (desquamation of all epidermal layers)
- **Individual variability** in time of desquamation (in majority of cases occurring during week 1 of Thiel embalming)
- **Dermal fingerprints** can be taken from Thiel-embalmed bodies
- **Desquamation in wet conditions** may probably be expected to occur during **week 1** of decomposition



Future work: Finalise fingerprinting study

DONE

- N = 48
- N = 16



TO DO

- **Collect** the rest of the fingerprints
- Compare the **quality** of fingerprints
- Compare **epidermal and dermal** fingerprints
- Compare the methods of fingerprint collection: **powder and photography**



Thank you

- Bequeathed
- CAHID anatomy technical staff
- Dr Lucina Hackman
Dr Helen Langstaff
- CAHID and LRFC PG colleagues

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